

Executive Summary: Commercialization of Publicly Developed Goods Review
September 2019

Commercialization Process Map:

- The commercialization process varies by value chain, country, and sector- every commercialization initiative should be mapped out to understand context specific bottlenecks that may inhibit successful, commercial uptake of a new technology or product from development to final consumption. The literature review yielded few results for a fully mapped out commercialization process that can be used to analyze common bottlenecks, so different approaches were combined to create a single high-level commercialization process applicable to bringing any technology to market. ***The resulting commercialization process map mirrors a value chain, which also looks at how value is added to a product or service but considers bottlenecks and opportunities for private sector commercialization which adds marketing and profitability components.***
- ***While no single model can be pre-determined for a commercialization initiative, profitability and strategic partnerships underly any successful initiative.*** Profitability and operational capacity should be considered when mapping out constraints and systems for each step of the process map.
- ***The process map is an intuitive way for development practitioners to organize their knowledge of challenges and opportunities of a commercialization initiative.*** There are key data points that can be collected for each step of the process to explain how a product or technology will be able to profitability reach end consumers. The process steps reflect where bottlenecks to commercialization are often found, however there are also key factors to a product's market success that cut across the different steps of process to catalyze market uptake.

Success Factors:

- ***Success factors are cross-cutting issues that impact multiple steps along the commercialization process. They fall into five broad categories: supply, demand, policy, finance, and development outcomes.*** Development outcomes is taken into consideration for the commercialization of public goods which are publicly supported due to their intended positive, public impact. Within these five broad categories, there are distinctive success factors specific to the product being commercialized, which can be used to identify and develop catalytic interventions that apply across the commercialization process in order to maximize impact throughout commercialization.
- These ***success factors provide development practitioners with a less linear, more holistic way to evaluate the potential challenges and opportunities of commercialization.*** When combined, the commercialization process map and cross-cutting success factors offer two complementary dimensions for identifying bottlenecks and accelerators. A framework with both components will identify where interventions can maximize impact.

Commercialization Framework:

- ***The commercialization framework is an analysis tool that overlays the commercialization process map and the success factors in order to break down the commercialization process and identify what cross-cutting interventions can be used to address multiple bottlenecks.*** It allows development practitioners to organize their knowledge in a simple, consistent way.
- ***By organizing information in this way, complex information for different products being commercialized in different markets and across different country contexts can be systematically***

analyzed and compared to determine catalytic investments. The commercialization framework can also map an organization's internal commercial capacity or its strategic partnerships to identify strengths and gaps to identify where new strategic partnerships may be necessary.

Case Study Analyses:

- **Three case studies were selected to demonstrate how the commercialization framework analysis works on different kinds of technologies and products. Cases were selected to show a variety of contexts:** 1) US fortified foods is an historical example of one of the most successful fortification initiatives in the world allowing the benefit of hindsight to analyze the full trajectory of industry and consumer adoption. 2) HIV/ AIDS medication is a global, health sector example that highlights the challenges of scaling a product to low-income countries and consumers. 3) Vitamin A cassava in Nigeria is a biofortified seed case that can directly show how this framework can be used by the GAIN/ HarvestPlus partnership.
- **For any given technology or product, the framework can identify where there are opportunities and bottlenecks for commercialization, however if the analysis fails to yield a compelling business case then it is also important to remember that pure, private-sector commercialization is just one possible tool for achieving outcomes.** Using the framework to map a commercialization initiative's internal capacity and existing partnerships can identify which new strategic partnerships are needed to achieve all success factors and overcome bottlenecks.

Private Sector Partner Selection and Engagement:

- **Once a commercialization case has been made, private sector partners can be identified based on their unique ability to profitably address the strengths, weaknesses, opportunities, and constraints of the sector when bringing the specific technology to market.** Partner selection criteria allows development practitioners to clearly recognize how potential private sector partners will address identified commercialization bottlenecks or needed organizational capacity.
- **Five key criteria for private sector partner selection mirror the five success factors categories: business model (finance), commercial viability (demand), legal requirements (policy), organizational capacity (supply), and beneficiary impact (development outcomes).** These criteria do not focus just on the innovation of a company's technology, rather they allow development practitioners to identify partners who can make a strong business case for bringing a new technology to market profitably. For potential partners that are strong in some key areas, but do not meet all five criteria, requirements can be prioritized according to the most pressing capacity needs and potential value-add to the partnership.
- **The key to successful public-private partnerships is a strategic approach to relationship management that can be implemented regardless of funding mechanism or public sector partner.** All partnerships can be made more effective by focusing on a collaboration to achieve mutual goals. Key management practices that have resulted in successful public-private partnerships include aligning stakeholder goals, selecting appropriate interventions for partnership, determining clear partnership criteria, negotiating performance-based milestones, tracking impact collaboratively, and providing clear, transparent decision-making.

Research and Development	Raw Material or Inputs	Production or Manufacture	Processing or Value Addition	Distribution	Marketing	Product Sales or Home Consumption	Enabling Environment
<ul style="list-style-type: none"> <input type="checkbox"/> R&D costs and funding <input type="checkbox"/> technology development institution <input type="checkbox"/> geographic and target market focus <input type="checkbox"/> Identification and characterization of potential customer segments <input type="checkbox"/> consumer and industry product trait preferences <input type="checkbox"/> hidden product costs and risks <input type="checkbox"/> development timeline <input type="checkbox"/> intellectual property ownership <input type="checkbox"/> licensing agreement structures <input type="checkbox"/> regulations for new products <input type="checkbox"/> desired development outcomes for underserved communities 	<ul style="list-style-type: none"> <input type="checkbox"/> availability and cost of raw inputs <input type="checkbox"/> supplier proximity to market buyers <input type="checkbox"/> access to operational capital to purchase inputs <input type="checkbox"/> import subsidies for raw materials <input type="checkbox"/> raw material export incentives and import regulations <input type="checkbox"/> access to complementary production inputs <input type="checkbox"/> 	<ul style="list-style-type: none"> <input type="checkbox"/> manufacture or production costs <input type="checkbox"/> production quality control requirement <input type="checkbox"/> production certification requirements <input type="checkbox"/> forecasted product demand <input type="checkbox"/> access to manufacture or production training <input type="checkbox"/> warehousing and cold chain capacity <input type="checkbox"/> ability to hold and manage inventory <input type="checkbox"/> access to finance- long-term capital credit, venture capital and growth investment <input type="checkbox"/> export production incentives <input type="checkbox"/> government mandated production 	<ul style="list-style-type: none"> <input type="checkbox"/> value addition or processing costs <input type="checkbox"/> preferred product traits for processors <input type="checkbox"/> required product quality and volume <input type="checkbox"/> packaging, processing, sorting <input type="checkbox"/> packaging or processing standards or requirements <input type="checkbox"/> processing certification requirements <input type="checkbox"/> access to finance- long-term capital credit, venture capital and growth investment 	<ul style="list-style-type: none"> <input type="checkbox"/> distribution costs <input type="checkbox"/> formal and informal distribution channels <input type="checkbox"/> geographic and market reach of distribution channels <input type="checkbox"/> wholesale and retail distribution outlets <input type="checkbox"/> trader networks and third-party sellers <input type="checkbox"/> last mile volumes, costs, partners <input type="checkbox"/> trusted market channels or outlets <input type="checkbox"/> ability to hold and manage inventory <input type="checkbox"/> warehousing and cold chain capacity <input type="checkbox"/> access to short-term operational credit and long-term capital credit <input type="checkbox"/> emergency relief product distribution strategies 	<ul style="list-style-type: none"> <input type="checkbox"/> marketing costs <input type="checkbox"/> geographic and target market focus <input type="checkbox"/> scale of potential customer segments <input type="checkbox"/> market channel and messaging selection <input type="checkbox"/> characteristics of customer segments <input type="checkbox"/> customer buying preferences and demand drivers <input type="checkbox"/> quality, convenience, timing, package volumes <input type="checkbox"/> lag time for demonstrated product value <input type="checkbox"/> quality or production practice certifications <input type="checkbox"/> trusted brands or product champions <input type="checkbox"/> product licensing labeling regulations <input type="checkbox"/> government target beneficiaries and outcomes 	<ul style="list-style-type: none"> <input type="checkbox"/> sales tracking and feedback loop <input type="checkbox"/> preferred product traits for consumers <input type="checkbox"/> retail outlets <input type="checkbox"/> required product quality and volume <input type="checkbox"/> product affordability and profitability <input type="checkbox"/> access to banking, mobile money, micro-finance <input type="checkbox"/> individual loan interest rates <input type="checkbox"/> import or government subsidies for equivalent products <input type="checkbox"/> government procurement requirements <input type="checkbox"/> relief procurement requirements and impact on product markets 	<ul style="list-style-type: none"> <input type="checkbox"/> road, water, power <input type="checkbox"/> mobile coverage <input type="checkbox"/> access to information systems <input type="checkbox"/> access to corporate services <input type="checkbox"/> commercial loan interest rates <input type="checkbox"/> government loan guarantees <input type="checkbox"/> access to grants and catalytic funding <input type="checkbox"/> intellectual property and product licensing <input type="checkbox"/> business licensing <input type="checkbox"/> corporate tax incentives or penalties <input type="checkbox"/> regional trade policies <input type="checkbox"/> government development or social service plans <input type="checkbox"/> government agencies and decision-makers <input type="checkbox"/> public-private partnerships

SUPPLY <i>Production Systems & Partnerships</i>	DEMAND <i>Market Strengthening & Demand Creation</i>	POLICY <i>Positive Commercial Enabling Environment</i>	FINANCE <i>Profitable Business Model & Financial Partnerships</i>	DEVELOPMENT OUTCOMES <i>Positive Impact or public benefit</i>
<ul style="list-style-type: none"> <input type="checkbox"/> Intellectual property ownership <input type="checkbox"/> Licensing agreements <input type="checkbox"/> Support from technology development institutions <input type="checkbox"/> Raw input availability and accessibility <input type="checkbox"/> Warehousing and storage including cold chains <input type="checkbox"/> Production training <input type="checkbox"/> Sorting, processing, packaging systems <input type="checkbox"/> Formal and informal supply chain channels <input type="checkbox"/> Appropriate last mile volumes, costs, and delivery partners <input type="checkbox"/> Proximity to markets <input type="checkbox"/> Information access on prices, demand, and market requirements <input type="checkbox"/> Public infrastructure and services 	<ul style="list-style-type: none"> <input type="checkbox"/> Customer segmentation and market targeting <input type="checkbox"/> Understanding and addressing hidden product costs and risks <input type="checkbox"/> Product usage <input type="checkbox"/> Industry preferences <input type="checkbox"/> Consumer preferences <input type="checkbox"/> Branding <input type="checkbox"/> Product advocates <input type="checkbox"/> Required quality and quantities <input type="checkbox"/> Trusted market outlets and retailers including export markets <input type="checkbox"/> Accessibility and affordability <input type="checkbox"/> Information access 	<ul style="list-style-type: none"> <input type="checkbox"/> Consistently applied legal/regulatory systems <input type="checkbox"/> New product regulations <input type="checkbox"/> Import subsidies for raw materials <input type="checkbox"/> Business licensing <input type="checkbox"/> Land access and ownership <input type="checkbox"/> Export production incentives <input type="checkbox"/> Processing and packaging standards and regulations <input type="checkbox"/> Product labelling requirements <input type="checkbox"/> Subsidies for equivalent products <input type="checkbox"/> Market regulation <input type="checkbox"/> Government procurement programs and strategies <input type="checkbox"/> National programs and strategies particularly those related to economic development 	<ul style="list-style-type: none"> <input type="checkbox"/> Intellectual property ownership <input type="checkbox"/> Licensing agreements <input type="checkbox"/> Support from technology development institutions <input type="checkbox"/> Raw input availability and accessibility <input type="checkbox"/> Warehousing and storage including cold chains <input type="checkbox"/> Production training <input type="checkbox"/> Sorting, processing, packaging systems <input type="checkbox"/> Formal and informal supply chain channels <input type="checkbox"/> Appropriate last mile volumes, costs, and delivery partners <input type="checkbox"/> Proximity to markets <input type="checkbox"/> Information access on prices, demand, and market requirements <input type="checkbox"/> Public infrastructure and services 	<ul style="list-style-type: none"> <input type="checkbox"/> Scale of intended impact <input type="checkbox"/> Target beneficiaries <input type="checkbox"/> vulnerable populations <input type="checkbox"/> Measurable impact indicators <input type="checkbox"/> Public sector role <input type="checkbox"/> Public-private partnerships including public financing <input type="checkbox"/> Impact timeframe <input type="checkbox"/> Geographic and value chain focus <input type="checkbox"/> Employment opportunities <input type="checkbox"/> Increased incomes <input type="checkbox"/> National delivery mechanisms <input type="checkbox"/> National policies and programs around development, humanitarian aid, and nutrition